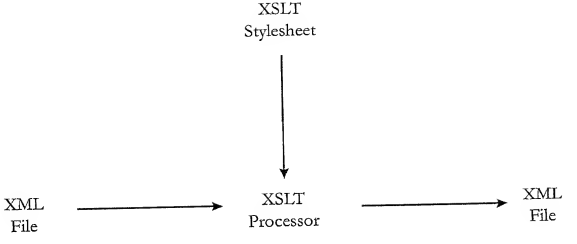
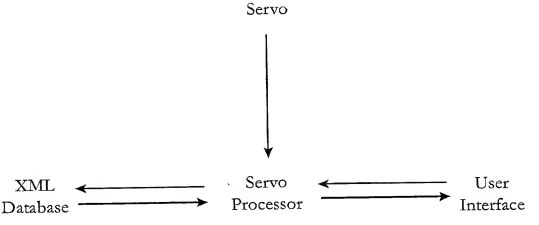
Figure 1



(PRIOR ART)

Figure 2



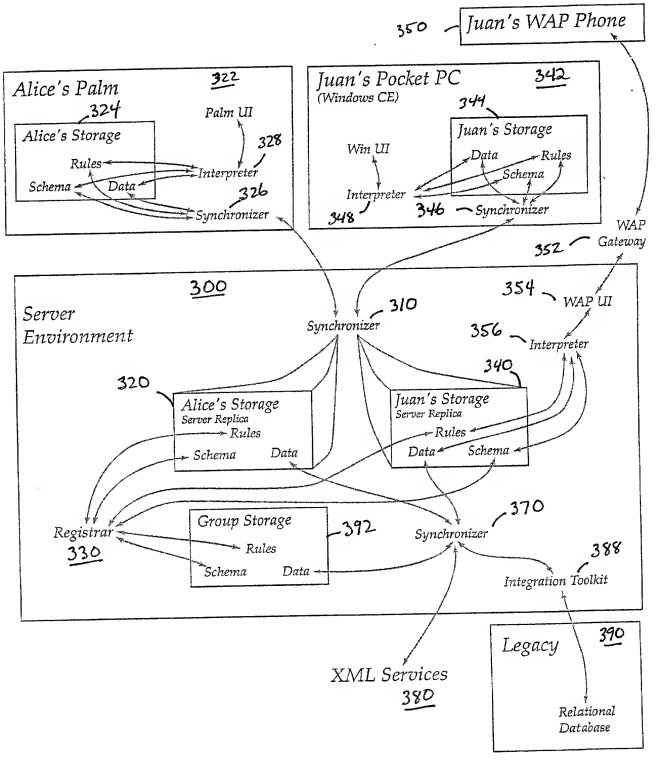

350
Juan's WAP Phone
Alice's Palm
322
Palm UI
324
Alice's Storage
328
Rules
Interpreter
Schema
Data
326
Synchronizer
Juan's Pocket PC
(Windows CE)
342
344
Juan's Storage
Win UI
Data
Rules
Schema
Interpreter
348
346
Synchronizer
WAP
Gateway
352
300
Server
Environment
Synchronizer
310
354
WAP UI
356
Interpreter
340
320
Alice's Storage
Server Replica
Rules
Schema
Data
Juan's Storage
Server Replica
Rules
Data
Schema
Registrar
330
Group Storage
372
Rules
Schema
Data
Synchronizer
370
388
Integration Toolkit
Legacy
390
XML Services
380
Relational
Database

Fig. 3

TOHOZT'OOZ900DT

Servo Template

```
400  <xsl:template match='wh:obj'>
402       <html:div>
404            <html:span><xsl:value-of select='@barId'/></html:span>
406            <ts:edit select='wh:desc'/>
408            <ts:expandable>
410                 <ts:hideable>
412                      <xsl:apply-templates select='key("objByLast", @wh:barId)'/>
414                 </ts:hideable>
416            </ts:expandable>
418       </html:div>
419  </xsl:template>
```

Fig. 4A

Database Fragment

```
420  <wh:objects>
422       <wh:obj wh:barId='271'>
424            <wh:desc>black metal cabinet</wh:desc>
426       </wh:obj>
428       <wh:obj wh:barId='259' wh:last='271'>
430            <wh:desc>top shelf</wh:desc>
432       </wh:obj>
434  </wh:objects>
```

Fig. 4B

Figure 5A

Interpretation multi-tree

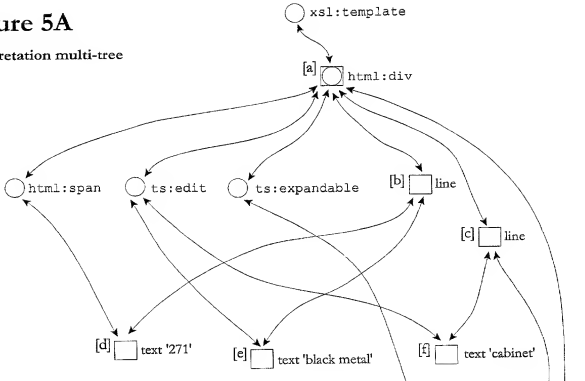


Figure 5B

Geometric Layout

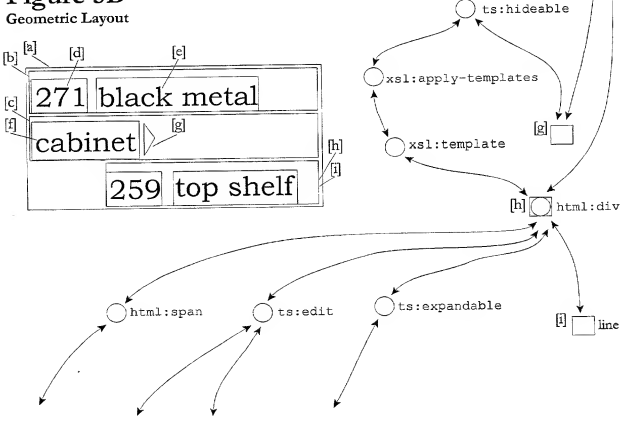


Figure 6
Context Node

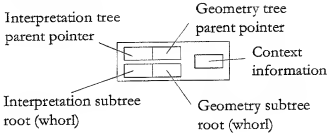
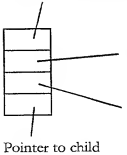


Figure 7
Interior Socket

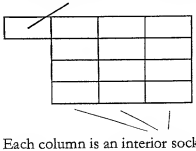
Sum of number of context node children, transitive over interior whorls, but not beyond the first level of context nodes



Pointer to child
(context node or interior whorl)
or cached information about
unmaterialized object

Figure 8
Interior Whorl

Parent pointer to parent
interior whorl or parent context node
containing the whorl referencing this



Each column is an interior socket

Patent-Pending

Figure 9A

Sparse relative multi-b-tree

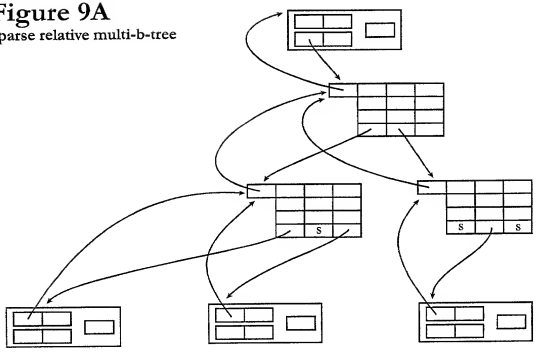
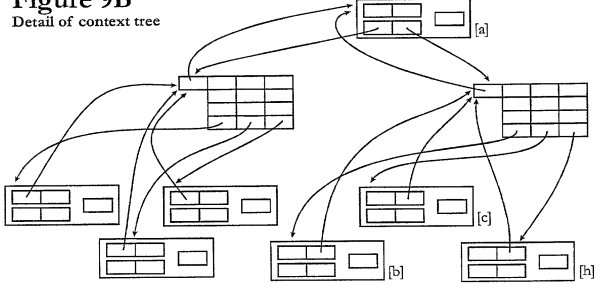


Figure 9B

Detail of context tree